15¢
$5.50 A YEAR

July 24, 1954

VOL. 66, No. 4 PAGES 49-64

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Mammoth and Man

See Page 52

A SCIENCE SERVICE PUBLICATION

BIOCHEMISTRY

Duplicating Life Chemicals

Supersonic vibrations break down germ cells to remove all signs of life, but the cells can still react chemically, thus giving method of synthesizing proteins.

► HOW LIVING cells duplicate their own kind of tissue is a mystery now on the way to being solved because a research team has found the right experimental approach.

Different kinds of nucleic acids can make other life-stuff line up to produce different proteins in a new synthesis method announced in *Nature* (June 26).

The research team, Dr. E. F. Gale and Joan P. Folkes of the Medical Research Council Unit for Chemical Microbiology, report their experimental work on protein synthesis at the University of Cambridge, England.

The role of nucleic acids as templates for the formation of protein structures has been suggested frequently.

"But any proof of the part they play," say these scientists, "let alone its mechanism, awaits the preparation of an experimental system which can synthesize protein and on which an effect of nucleic acids can be demonstrated. Such a system has now been obtained by disruption of suspensions of *Staphylococcus aureus* by exposure to supersonic vibration."

Starting with the common germs responsible for boils, and subjecting them to "silent sound" vibrations for about half an hour, a suspension of broken-down germ cells was obtained that had lost all signs of life, but was still capable of chemical combination under the proper conditions.

Adding one by one or in combination the chemicals that are known to take part in building living tissue, the research team is learning the different rates at which the individual amino acids take part in the formation of living matter.

The original template chemical is deoxyribonucleic acid, which is able to start the organization but cannot form protein until some ribonucleic acid has been formed.

"It may be that it is the ribonucleic acid which collects, organizes and orientates amino-acid residues before they split away as protein," the Cambridge scientists say, "or it may be that deoxyribonucleic acid combines with and organizes amino-acid residues which cannot combine into a peptide chain until they have been taken over by the corresponding ribonucleic acid."

Light is thrown on the action of penicillin by one line of experiment they report. The antibiotic, in their studies, stopped growth by preventing the formation of ribonucleic acid.

Science News Letter, July 24, 1954

MEDICINE

100% Rat Cancer Cures

► ALL OF the animals bearing one type of transplanted cancer can be cured by chemical injections, it is announced in the seventh progress report of the Sloan-Kettering Institute of Memorial Center for Cancer and Allied Diseases, New York.

Of 2,866 animals with many types of cancers, 1,700, or 59%, were cured by one or another compound tested.

Regular cure by chemicals of cancer in animals could foreshadow similar results in man. This is the history of other public health problems whose conquest has been preceded by their control in the laboratory.

The Sloan-Kettering investigators injected animals with a compound after growths of transplanted cancer had become well established. Over 23 different types of solid tumors, 18 mouse cancers and five rat cancers were used routinely in the experiments.

Ten compounds have been found that produce permanent cure in one or more of these types of animal cancers.

For example, TEM, a compound developed by Sloan-Kettering, routinely cures 95% of Flexner-Jobling carcinoma in rats, 100% of Jensen sarcoma in rats.

A related compound, TSPA, cures 83% of Ridgeway osteogenic sarcoma in mice. Over-all cures of 67% of animal cancers other than leukemia were reported.

Effects of chemicals against six different strains of mouse leukemia were reported. A combination of P-165, or O-diazoacetyl-L-serine, and 6-MP, or 6-mercaptopurine, developed by Sloan-Kettering in cooperation with Parke-Davis and Wellcome Research Laboratories, respectively, results in cures of 98% of one type of leukemia in mice, 75% of another type. Over-all cures of 44% of the group of mouse leukemias were achieved.

These agents since have been tried in man or are currently being tested. No chemicals have been found that cure any type of cancer or leukemia in man, although compounds have been developed that temporarily restrain certain types of human cancer, particularly the leukemias.

A few years ago, when there were no chemicals available for the treatment of acute leukemia in children, only five percent of the youngsters survived for one year. After the discovery of amethopterin and cortisone, 29% could be kept alive for one year. Now that 6-MP, the newest agent, has been added to the group, 52% are living for at least one year after the start of their disease.

Chemicals that are tested in the Institute's program are received for trial from leading industrial and pharamaceutical laboratories throughout the world, many of which have cooperative contracts with the Institute for the synthesis of new compounds.

This work is supported by the American Cancer Society, the Damon Runyon Memorial Fund, the National Cancer Institute of the U. S. Public Health Service, the Black-Stevenson Fund and by direct contributions from the public.

Science News Letter, July 24, 1954

VITAL STATISTICS

More Boys Than Girls Born During World War II

► AN INCREASE in the proportion of male births occurred in the United States toward the end of World War II, supporting a common belief based on European experience that male births outnumber female births during periods of war.

Reported by Dr. Brian MacMahon of the State University College of Medicine, New York, and Dr. Thomas F. Pugh of the Harvard School of Public Health, the increase was particularly noticeable in Connecticut, Massachusetts, New Jersey, New York and Rhode Island. Statistics from these states were analyzed because of their completeness of birth registrations.

Male births increased during the year 1945 to 1947, with a peak in 1946. The scientists do not attempt to explain the larger proportion of male births, but they did determine that it was not the result of changes in distribution of births by age of mother or father or by order of birth.

In the *American Journal of Human Genetics* (June), they report the effect was most marked in first births and occurred before the peak of postwar marriages.

Science News Letter, July 24, 1954

METEOROLOGY

We Usually Have "Unusual" Weather

► "THE UNUSUAL weather we are having this year is not essentially different from the abnormalities we have had in previous years," Dr. Francis W. Reichelderfer, chief of the U. S. Weather Bureau, has stated.

Previous years, Dr. Reichelderfer explained, means "prior to the days we had any means of putting artificial nucleating agents in the atmosphere.

"There is certainly," he said, "no direct evidence of any effect of atomic or hydrogen bombs on the weather."

Dr. Reichelderfer pointed out that back in 1915 many people were blaming abnormalities of the weather in that year on the then "new-fangled" radio waves.

Science News Letter, July 24, 1954

PUBLIC HEALTH

Chemicals in Foods

Today's age is a chemical one, causing some people to fear that poisons may be accumulating in a person's body, although others believe such fears are exaggerated.

▶ WILL TODAY'S generation of young adults find, when they reach the 50- to 70-age bracket, that they have been slowly poisoning themselves and cutting one to five years off their lives because of the food they have eaten?

There are some who fear this may be the case. Others are quite confident that the suggested dangers are exaggerated.

We are living in a chemical age. We use new and powerful poisons in our fight against the insect world. We use new chemicals to preserve or to improve the quality of our food.

We use new chemicals to keep our clothes and homes clean, and to wash our eating utensils and ourselves. Many of the clothes we wear and the things we use and handle daily are the products of chemical laboratories and manufacturing plants.

Our doctors even have a kind of synthetic chemical fluid to put in our veins instead of blood in some emergencies.

Many, probably most, of these new chemicals and chemical products are given rigorous safety tests before they are let loose among us. We have laws, federal and state and even city ordinances, protecting us from much of the danger.

However, there are two limits to the protection such laws and tests can give us:

1. The carelessness of each individual who uses a substance known to be potentially dangerous;

2. Ignorance, unavoidable for the most part so far, of the long-time effect of some chemicals.

Take, as an example of this last, one of the new chemicals developed as a blood extender for use in treating shock if whole blood or plasma is not available. This chemical is polyvinyl pyrrolidone, or PVP for short. It was developed and used in Germany during World War II.

PVP has had extensive tests since then in this country. No adverse effects have been reported. However, after a time, this chemical leaves the blood stream and some of it deposits in the liver and spleen. It stays there without showing any sign of setting up inflammation or other trouble—so far. Whether it will stay there, unchanged and without causing change, for 20 or 30 years is a still unanswered question.

Because that question has not yet been answered, our federal Food and Drug Administration has refused to allow it to go on the general market. In technically correct terms, PVP does not yet have an effective new drug application.

Congress has sent to the White House a bill to give the Secretary of Health, Education and Welfare, actually the Food and Drug Administration in that department, authority to determine how much insect-killing chemicals can be left on fruits and vegetables when they go to market.

These chemicals, known as insecticides or as pesticides, include some highly poisonous substances. One of these, parathion, is related to the much-dreaded nerve gases developed for war use.

However, even with legal limits, "tolerances" as they are called technically, set for the amount of these chemicals that can be left on foods shipped in interstate commerce, the consumer may be exposed to danger from them right in his own or his neighbor's garden.

Home gardeners as well as farmers use these sprays to protect their fruits and vegetables from insects and other pests. Many farmers sell some of their products at roadside stands and in farmers' markets on the outskirts of our cities.

Since these fruits and vegetables are not shipped in interstate commerce, they, like the home grown ones, are not subject to federal protecting laws. They may or may not come into your home with spray residue still on them.

Here is where the individual consumer comes in. He can protect himself by the simple method of washing all fruits and vegetables before eating them. Washing or spraying with water will remove any spray residue. Even if there were no spray residue, washing fruits and vegetables before eating is a good idea, since the washing removes dust, fly specks and the like.

The individual consumer needs to do a little self-protecting in still another way. When using insecticides and pesticides in the garden, he should read carefully the manufacturer's label and follow the instructions on it for avoiding any poisonous effect on people and domestic animals, including pets.

A good idea is to read the instructions and warnings every time the insecticide is used, to make sure no important point is forgotten.

This goes for both garden sprays and the insecticide sprays used to rid the house of flies, roaches, ants and the like. It applies also to cleansing agents, rust removers and all the other chemical age aids to daily living.

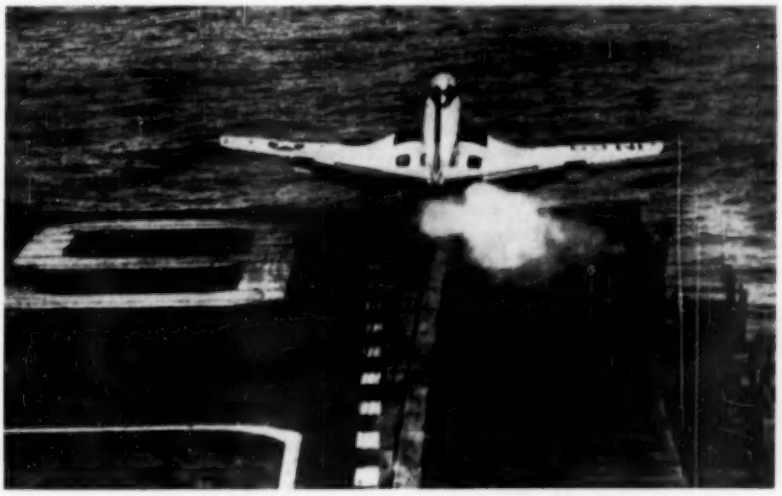
Science News Letter, July 24, 1954

TECHNOLOGY

Hard Vegetable Wax From Saw Palmetto

▶ A HARD vegetable wax of industrial importance can be obtained from the saw, or "scrub," palmetto that grows almost like a weed from South Carolina to the Florida Keys and along the Gulf coast to Louisiana, Edward A. Wilder and Eugene D. Kitzke of S. C. Johnson and Son, Racine, Wis., report in *Science* (July 16).

Science News Letter, July 24, 1954



STEAM CATAPULT FOR JETS—The first jet fighter to be launched by the U. S. Navy's new steam catapult from aboard a carrier is shown here. A twin-jet fighter, the McDonnell F2H-3 Banshee, is leaving the flight deck of the U.S.S. HANCOCK in tests that may lead to launching of aircraft carrying much heavier loads than can be handled on the hydraulic catapults in use now. A substantial reduction in launching time may also be achieved.

ARCHAEOLOGY

Find Fossil Bones

See Front Cover

▶ FRESH EVIDENCE that ancient Mexicans lived near Mexico City some 11,000 years ago and hunted elephants now long extinct has been unearthed at the "reservoir of elephants" about 22 miles northeast of Mexico City.

The fossilized bones of a second mammoth, together with the stone weapons that probably felled the beast, were discovered in the dry lake Texcoco by Luis Aveleyra, director of prehistoric archaeology of the Mexican National Museum, and Dr. Manuel Maldonado, paleontologist. The new find was made at the same site where another mammoth was found in 1952, together with obsidian weapons. (See SNL, March 29, 1952, p. 194.)

The site is close to where Mexico's ancient man, 11,000-year-old Tepexpan Man, was found in 1947.

Further link of the extinct mammoth with man was found in the new discovery. Some of the fossil bones showed signs of having been worked on with stone tools. This fact, together with the position of the bones and stone weapons led Mr. Aveleyra to state that "results obtained in the excavations of the Santa Isabel Iztapan mammoths confirm once and for all the existence of man as a hunter of these animals in the Tepexpan region."

The weapons found with the new mammoth discovery were three projectile points known to scientists as "atlatls." One such find is shown on the cover of this week's SCIENCE NEWS LETTER.

Somewhat larger than arrow heads, these points were released from a shaft and shot into an animal's ribs. Modern tests with a similar device have shown that a man with sufficient strength and ability can put the atlatl through one and a half inches of wood at approximately 45 yards.

The discoverers of the mammoth bones believe that the atlatl points might not have been adequate to kill such a huge animal immediately. However, the cries of the hunters might have driven the wounded animal into the waters of what was then a shallow lake. The human hunters then had only to wait until the animal had died in the water.

Science News Letter, July 24, 1954

ARCHAEOLOGY

Study Bible Scrolls

▶ FRESH LIGHT on the original meaning of Old Testament text is expected from a minute study of the very ancient manuscripts found in caves along the Dead Sea and known to archaeologists as the Dead Sea scrolls. (See SNL, April 19, 1952, p. 243.). Some of these scrolls date back to 100 B.C.

The Very Reverend Monsignor Patrick W. Skehan, professor of Semitic and Egyptian languages at the Catholic University of America and expert on the Bible languages, has just arrived in Jerusalem to make such a study.

Although many of the ancient manuscripts have been found, others are still being located in the region. Deciphering them is a delicate problem for experts in the field.

First task is the difficult one of unrolling the scrolls. Most of them are written on papyrus and leather, but some are on tightly rolled sheets of bronze. When they have been softened and unrolled, then they must be cleaned and the language identified. If they are in small fragments, the pieces must be painstakingly put together.

When it comes to identifying the language, and reading and translating the ancient text, Msgr. Skehan's talents will be put to good use. In addition to his knowledge of ancient Biblical texts, he is familiar not only with Greek and Latin, but with Hebrew, Aramaic, Syriac, Akkadian and Arabic.

In his study of the scrolls, Msgr. Skehan will be working under the direction of Prof. C. Lankester Harding, director of antiquities for the Hashemite Kingdom of the Jordan. He will work at the Palestine Archaeological Museum.

Msgr. Skehan has already completed a study of one of the Dead Sea Scrolls, the famous scroll of Isaias. When this manuscript was found in 1947, it was judged to be 1,000 years older than any other Old Testament manuscript known, dating back to the first century B.C.

Science News Letter, July 24, 1954

RADIO ASTRONOMY

Biggest Radio Telescope Is Now Being Completed

▶ THE BIGGEST radio telescope in the world will start to survey the sky for new radio "stars" about mid-August.

This radio telescope consists of pairs of TV-like antennas, known as dipoles, strung in a straight line for 2,000 feet. They make a gigantic X in a 90-acre field near Seneca, Md.

Two poles 25 feet apart and 15 feet high, linked together by taut wire, form each dipole, and all the dipoles are connected to the recording point by coaxial cable.

The largest radio telescope is being built by the Carnegie Institution of Washington to survey radio noise in the 20 megacycle range received on earth from space. With it, scientists will check how much of this noise is due to radio "stars" or discrete sources, how much comes from ionized hydrogen gas and how much from outside our own Milky Way galaxy.

Dr. F. G. Smith of Cavendish Laboratory, Cambridge University, England, now a visiting scientist at Carnegie Institution, is supervising the radio telescope's construction. Since radio signals bounced off the ionosphere from earth could interfere with celestial radio noise, Dr. Smith hopes the present quiet long-distance radio reception conditions will continue.

Science News Letter, July 24, 1954

SCIENCE NEWS LETTER

VOL. 66 JULY 24, 1954 NO. 4

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1954, by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, ELdorado 5-5666, and 435 N. Michigan Ave., Chicago 11, SUperior 7-6048.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Karl Lark-Horovitz, Purdue University; Kirtley F. Mather, Harvard University; Paul B. Sears, Yale University. Nominated by the National Academy of Sciences: Homer W. Smith, New York University; Edward U. Condon, Corning Glass Works; Harlow Shapley, Harvard College Observatory. Nominated by the National Research Council: Duane Roller, American Association for the Advancement of Science: Ross G. Harrison, Yale University; Leonard Carmichael, Smithsonian Institution. Nominated by the Journalistic Profession: Neil H. Swanson, Baltimore, Md.; O. W. Riegel, Washington and Lee University; Michael A. Gorman, Flint Journal. Nominated by the Scripps Estate: Charles E. Scripps, Cincinnati, Ohio; Edward J. Meeman, Memphis Press-Scimitar; John T. O'Rourke, Washington Daily News.

Officers — President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Jane Stafford, Marjorie Van de Water, Ann Ewing, Allen Long. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. Interlingua Division in New York: Alexander Gode, Hugh E. Blair, 80 E. 11th St., GRamercy 3-5410.

ASSEMBLING BY COLOR PHOTOGRAPHY—Assemblers work directly from color transparencies, a replica of the finished product which serves as an excellent visual aid, in the Ecktacolor process, introduced by Bell Aircraft Corporation for manufacture of complex electronic components.

ENTOMOLOGY

Repelling Chiggers

▶ REPELLENTS AND insecticides can rid you or your whole yard of chiggers and other biting pests.

For the individual, repellents containing dimethyl phthalate, indalone or ethyl hexanediol are nearly 100% effective when applied properly. Dimethyl phthalate and indalone are available at chemical firms for mixing by the user.

Ethyl hexanediol is used in various commercial products. It is available at most drug stores in liquid form under the name "6-12." A body spray, "Repel-A-Mist," and a stick, "Skeeto-Go," also contain the chemical.

For most effective protection against chiggers, these products should be applied to skin or clothing around sock tops, trouser cuffs and waist, and shirt sleeves and neck.

Spread on exposed skin, the three chemicals afford protection from flying insects such as mosquitoes, biting flies, gnats and some types of ticks.

In an open area, toxaphene or chlordane applied as an emulsion spray will provide good control for one to two months. These chemicals are sold at hardware and garden stores under a variety of commercial names.

Do not use these insecticides near fruit or vegetable gardens. Children and pets must be kept from the area until the spray dries.

Before the Second World War, there was little protection from chiggers. Sulfur dusts and ointments were messy and only partially effective.

However, when the fighting began in the Pacific and U. S. troops were attacked by chiggers carrying mite typhus, the Army allotted funds for chigger study to the U. S. Agriculture Department's laboratory in Orlando, Fla.

The Orlando scientists hired young boys to test various chemicals for effectiveness in repelling the tiny insect foe.

The boys, each with clothing treated with a different chemical, placed themselves in areas where chiggers were numerous. The fewer bites on a boy, the more effective the repellent was judged.

Within two hours, the boys often collected 200 bites. They suffered no more than a few days' itching, however. Unlike the insects' Pacific brothers and their cousins, the ticks, chiggers in the United States carry no diseases.

Many of the modern repellents and insecticides on today's market are the results of these boys' itching for science.

The chigger, often called jigger or redbug, is found in areas throughout the country, but most thickly in southern, central and Midwestern states.

When a larva, the chigger needs blood to mature. It attaches itself to a human or other mammal. On a human, it crawls until tight clothing restricts its movement and then bores into the skin.

Since the parasite is no bigger than a pin-point, its victim does not know of the attack until itching begins. Then red bites are visible, clustered in rings around beltline and sock tops.

The bites cause a severe itching that lasts several days. Calamine lotion, baking soda and water, and ammonia may help relieve the itching somewhat.

The only real "cure" for chigger bites, however, is not to get bitten.

Science News Letter, July 24, 1954

TECHNOLOGY

Color Pictures Replace Hard-to-Read Blueprints

▶ COLOR PICTURES are replacing blueprints on Bell Aircraft Corporation's assembly lines in Buffalo, N. Y., where complex electronic gear is made.

The color pictures show the innards of the equipment being manufactured. An untrained workman can glance at the picture and see immediately where to solder yellow wires, or how to bend blue wires, or where a pack of wires should be tied together.

The pictures eliminate long study of hard-to-read blueprints, which the workman often supplements with a trip to an actual working model.

Bell engineers believe the pictures will "substantially reduce" the reams of blueprints needed for the manufacture of a new piece of equipment. The meaning of the various wires is also said to become clearer to the workman so that he begins to understand what each wire's function is.

The color pictures are shot on a color film that produces a color "negative" instead of the familiar positive transparency. Any number of positive prints can be made from this negative. Each assembler can view his own copy of the picture.

Science News Letter, July 24, 1954

MEDICINE

Identical Twins Have Identical Disease

▶ A CASE of identical twin housewives who had the same disease only a few months apart, although for part of the time they were separated by 3,000 miles, is reported in the *Journal of the American Medical Association* (July 10) by two Cleveland Clinic physicians, Drs. Francis J. Rogers and Earl W. Netherton.

The disease was sarcoidosis, a chronic infectious disease affecting the eyes and face.

Medical literature showed two other sets of identical twins who had similar disorders. Such cases of identical diseases in identical twins are particularly interesting because such twins are so similar in hereditary makeup that they can be expected to react to any given stress in a manner more similar than two unrelated persons or even ordinary brothers or sisters.

Science News Letter, July 24, 1954

PUBLIC HEALTH

Baby Malnutrition

Over 50 names are used around the world to describe malnutrition resulting from inadequate protein intake, the Food and Agriculture Organization reports.

► "SUGAR BABY" is a term of endearment for some people, but in Jamaica it is the name for a disease of malnutrition that may kill as many as half the babies affected.

Fatty liver disease, infantile pellagra and nutrition dystrophy are others of the 50 odd names used around the world to describe the same type of malnutrition.

The condition is protein malnutrition, nowadays considered more serious than vitamin or mineral deficiencies.

In some parts of Africa, nearly every child suffers from it at some time in his life, according to a report from the Food and Agriculture Organization of the United Nations. Until recently, this condition had been reported under so many different names that its worldwide occurrence was obscure.

Basic facts of this disease are simple, FAO reported. Infants and young people need a diet rich in protein to build healthy bodies. Mother's milk is the best source of protein for the infant, as long as the mother can provide it. However, as the child grows up this diet must be supplemented.

Cow's milk and other forms of protein are fed to the growing child in some areas, such as the United States, but protein is scarce in many parts of the world where staple foods are starches—manioc, corn or banana.

Children in such areas are suddenly switched from mother's milk to the family fare, and their bodies suffer from lack of protein. In countries where protein-rich meat, fish or eggs are served rarely, adult members of the family often reserve such food for themselves.

This is what slows the growth of children, and often leads to permanent deformity and death.

Put the child on a diet of protein-rich skim milk, and he will often recover in a few weeks. In the most serious cases, blood transfusions may be necessary at first.

At many international nutrition conferences, various foods, such as soy milk, have been considered as substitutes for milk. Soy bean mixes have been successfully prepared in America and Europe for children allergic to milk, but these usually are too expensive for poor pocketbooks.

A factory in Hongkong now prepares an distributes an emulsion of soy beans. In other parts of Asia, particularly in the Philippines, Indonesia and India, experiments with soy beans and peanuts are underway.

Another source of protein is peanut cake, a material left after oil has been crushed from peanuts. Peanut flour, like soy flour, supplements the proteins of maize and other cereals.

Fish, rich in protein, often is available in large quantities at low prices. FAO has encouraged fishing industries in both fresh and salt water. In the Philippines, Japan and Indonesia, schools now serve meals of fish small enough to be eaten whole.

Fish flour, once highly rancid in flavor and odor, now is being worked on by FAO scientists for improved edibility and nutritional value. It may prove a valuable source of protein nutrition.

Putting more protein into diets is not just a technical production problem, FAO reported. It is also a sociological and educational problem.

In many parts of the world, for example, livestock are symbols of wealth and social standing, and remain un-milked and uneaten. Convincing people to make use of this already existing protein is a problem for sociologists.

Mothers in underdeveloped communities must be told of nutritional needs of their children. Too many of these mothers react to their children's digestive upsets by putting them on a near-starvation diet in the hope that the disturbances will clear up. Instead they are aggravated. This is an educational problem.

Once these problems are cleared up and more protein-rich foods are produced throughout the world, FAO believes this tragic disease will dwindle to relative insignificance within 10 or 20 years.

Science News Letter, July 24, 1954

● RADIO

Saturday, July 31, 1954, 3:15-3:30 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Carl N. Shuster Jr., instructor in zoology, Rutgers University, the State University of New Jersey, will discuss the "Horseshoe Crab."

PSYCHIATRY

100-Year-Old System Slows Mental Health Care

► PREVENTION OF mental sickness and care of mental patients is slowed by century-old systems of administration in most states, Raymond G. Fuller, social research specialist, charges in reporting a study made for the National Association for Mental Health in New York. (See p. 60.)

A separate, coordinate department of mental health would be the most desirable system for most states, he believes. Only 10 states, however, have such departments.

In his two-year study of the administration of state psychiatric services, Mr. Fuller noted the trend in recent legislation affecting administrative set-ups and systems has been unmistakably in the direction of improvement. However, he feels the improvement might be speeded up.

His report calls for "intensive, comprehensive research into every phase of the problem of mental illness" and urges that adequate training facilities be provided for all groups of psychiatric personnel.

Research costs money, but Mr. Fuller points out that "business and industry think it pays." At the present time, he reports, "only two cents of every dollar spent on medical research in this country are available for research in mental illness, though the direct expense for mental illness in 1952 was more than a billion dollars, or one-third of the nation's bill for medical care."

Science News Letter, July 24, 1954

ICHTHYOLOGY

Fish Dislike Man's Smell

► YOU MAY not like the fish smell around water-front areas, but the feeling is mutual. Fish, salmon at least, also dislike your odor.

If salmon smell man, or another natural enemy, wading into upstream water, they keep their distance until sure that all threat to life and fin has passed.

J. R. Brett and D. MacKinnon of the Pacific Biological Station, Nanaimo, B. C., reported to the Fisheries Research Board of Canada that they tried out 54 "smells" at a fish ladder at Stamp Falls. Spring and coho salmon use this ladder to bypass the dam while swimming upstream to spawn.

Since the tests were conducted at a time when migration was stable, any marked decrease in the number of fish meant that the fish were reacting to the new odor.

Of the 54 odor solutions tested, only five produced changes in the migration rate. These were from human skin, bear paw, deer foot, dog paw and sea-lion meat. All five of these mammals are enemies of the salmon.

For ten minutes after these odors were mixed in the water, no fish downstream climbed farther up the ladder. A few of the salmon even leaped backward, down the ladder.

Among the substances tested were two commercial products widely used by salmon troll fishermen to clean their spoons. Neither products alarmed the fish.

Bait preservative, shark repellent, pulp-mill waste, fish products, and several types of oil were also tested, but the rate of migration did not change with any of these.

Science News Letter, July 24, 1954

PHYSIOLOGY

Bone Test for Diet Clues

▶ SOME DAY doctors will make a test of your bones to see whether your diet needs improving, just as they now test a drop of blood from your finger or ear to see whether or not you are anemic.

This is foreseen from research by Dr. Walter N. Brown Jr. at Pennsylvania State University. Sparked by an idea of Dr. Pauline Beery Mack, now at Texas State College for Women, Denton, Dr. Brown developed a machine known as the bone density computer.

Besides showing up nutritional deficiencies, the machine is expected to tell physicians how quickly a broken bone is knitting and to help in the fight against polio and arthritis.

"Measuring bone density," Dr. Brown explained, "involves measuring the amount of calcium in a bone. We first had to learn how to do this technically. That work, which took several years, led to the development of the computer. Now we are ready to start large scale measuring experiments."

Such experiments involve the cooperation of physicians and organizations throughout the country, who will take special X-ray films. Regular equipment is used, but an aluminum-zinc alloy wedge is sent to help standardize film conditions.

"When a picture is taken," Dr. Brown says, "the bone absorbs X-rays, and where it absorbs them, the film registers clearer. That means the more transparent the film is, the denser the bone is. Accordingly, we use film transparency to help tell us about bone density.

"But any number of factors can affect the film itself. Different X-ray machines blacken film to a different extent. Film is manufactured by many methods and variations occur because of this, as well as when it is being developed.

"The wedge, however, is not subject to these variables. By laying it alongside the bone to be X-rayed, a constant standard is established, against which film variables may be checked in the computer."

The bone density computer finds the density of bone for each tiny area of the X-ray film, by comparing these areas with the wedge picture. It then averages all the spots together to get the density of the desired section of bone.

The bone density technique is set up to handle only extremity bones in the hands and feet. University scientists are now trying to develop a machine that will find the density of bones inside the body, like the spine or pelvis, or the skull, which are surrounded by areas of soft tissue.

Once films have been taken, they are sent back to the University lab, to be put through the computer. A report is then sent to the physician. With one shift of operators working, the machine will process some 3,000 films a month.

"Two experiments are currently being run," Dr. Brown said. "One is with a mixed age group, under the auspices of a nutritional organization in eight western states. The other is in a Philadelphia home for the aged.

"We hope to get a series of bone density measurements on the same individuals. From these, we may learn whether the amount of minerals or calcium in the bones varies as a person grows older, when he changes locale, or when his diet is altered. If such changes can be verified, they would be pretty important for medical researchers."

Science News Letter, July 24, 1954

LENSLESS MICROSCOPE—With this field emission microscope, invented by Dr. Edwin W. Muller of the Pennsylvania State University, he is able to view the tiniest particles of matter yet seen by man. The lensless microscope consists of an extremely sharp needle sealed into one end of a cone-shaped vacuum tube. The needle is pointed at a fluorescent screen, and high voltages strip electrons off the atoms in its tiny, rounded tip. A photograph of the microscope's screen, shown in the inset, reveals molecules of an organic dyestuff sitting on a tungsten crystal. The white, paired circular objects are the molecules.

ANIMAL HUSBANDRY

Turkeys' Growth Normal At 10,500 Feet Altitude

▶ TURKEYS SUFFER no ill effects if they live in an altitude of about two miles above sea level, 10,500 feet.

Day-old turkeys hatched at Davis, Calif., which is just above sea level, were taken to the higher altitude of the White Mountain High Altitude Station at Big Pine, Calif., where their growth was compared with similar stock at sea level.

There was no interference with their growth or the attainment of sexual maturity. The only reported change was an increase in heart size. The birds did not show the increases in lung and spleen size that have been observed in mammals raised in the mountains.

The research was performed by A. H. Smith, W. O. Wilson and N. Pace of the University of California.

Science News Letter, July 24, 1954

PSYCHOLOGY

Movies "Good Medicine" For Disturbed Adolescent

▶ A YEAR'S experiment with a group of boys in Texas has indicated that movies may be "good medicine" in the treatment of emotionally disturbed adolescents.

Dr. Ira Iscoe, visiting assistant professor of psychology at the University of California at Los Angeles, has reported that movies dealing with problems common to those who have constant difficulties at school and home were shown to the group several nights a week. Themes typical of the pictures involved parental rejection, social misfits and sex problems.

Members of the group were encouraged to comment during the films, and voluntary "bull sessions" about the picture followed. Recordings were made of the entire period.

"Comments by participants often furnished better insight into individual problems than traditional interview techniques," Dr. Iscoe said. "Discussions stimulated by the pictures proved to be an excellent form of group therapy.

"This familiar medium seems to be one of the best means of 'breaking the ice' with a new group," he said. "Even the most withdrawn participated more readily than usual.

"There is a need for more 'up-to-date' pictures for this work," he added. "The films we are using, though appropriate in theme, would be more effective if the dialogue were in a language more typical of today's youth."

Science News Letter, July 24, 1954

AERONAUTICS

Jetliner Tested Against Explosions

▶ EXTENSIVE PRESSURE tests have been run on Boeing Airplane Company's jetliner as a routine approach toward preventing disasters such as have been afflicting the British jetliner, the Comet.

The prototype Model 707 Stratoliner already has been severely pressure tested for weaknesses in its frame. Sensitive strain gauges were spotted at critical points and the plane was "inflated" to many times its normal pressure.

The first few planes of a new make are always pressure tested as they come off the production line. Even after engineers are convinced that manufacture is perfect, pressure tests are made on a spot check basis.

During these pressure tests, the strain gauges will show whether the metal is yielding more than it should. This is a key to whether the metal is likely to fail in service.

Recent British tests at the Farnborough Experimental Station revealed that the three Comet explosions, which killed 99 persons, apparently were due to "tired metal," technically called metal fatigue.

Upon learning further details of the British findings, Boeing engineers plan to check back to see that nothing has been overlooked on the Stratoliner.

The military jet bomber, the B-52, which is larger than both the new American jetliner and the British Comet, has performed without mishap.

The plane could be flying commercially by 1957, if military requirements do not take priority. As yet the company has not tried to sell it to commercial airlines.

The Stratoliner has a wingspan of 130 feet. It is 127 feet, 10 inches long, weighs 190,000 pounds, is powered by four J-57 Pratt and Whitney engines, can climb 40,000 feet and cruise 500 miles an hour.

In contrast, the bigger B-52, now used by the U. S. Air Force, has a wingspan of 185 feet, a length of 153 feet, a gross weight of 300,000 pounds and a cruising speed of more than 600 miles an hour. The B-52 is powered by eight J-57 engines and presumably can climb more than 40,000 feet.

Science News Letter, July 24, 1954

GENETICS

Predicts Fantastic Number of Genes

▶ DISCOVERY OF what will seem a "fantastic" number of genes, or heredity units, in the mouse has been predicted by Miss Margaret M. Dickie of the Jackson Laboratory, Bar Harbor, Me.

At present a total of 215 named genes have been discovered in the mouse. Of these, 115 have been located on 15 chromosome groups. Before the laboratory's founding, in the period 1903-1925, various scientists had named 19 genes and alleles and had located four of them on Chromosome I.

"Perhaps the most outstanding event of this decade has been the identification and linkage of several of the sex-linked genes," Miss Dickie stated. These, she said, are "brindled, mottled, tabby, jimpy, tortoise shell and a sex-linked lethal and bent tail.

"With the rapid accumulation of data that seems to be forthcoming almost daily, it appears that very soon all 20 linkage groups will be marked and the number of genes described will seem fantastic."

Science News Letter, July 24, 1954

SURGERY

Ordinary Vest Used To Treat Rib Fractures

▶ AN ORDINARY man's vest has been found to be a useful medical aid in treating fractures of the ribs and similar chest conditions.

Dr. Philip Lewin, professor emeritus of orthopedic surgery, Northwestern University Medical School, Chicago, reports in the *Journal of the American Medical Association* (July 17) that use of a vest and six or eight large safety pins inserted at the back to regulate its size has advantages over traditional strapping up with bandages and adhesive tape.

Science News Letter, July 24, 1954

IN SCIENC

INVENTION

Metal Continuously Cast With Mold Technique

▶ INGOTS OF aluminum and magnesium can be continuously drawn from a bottomless water-cooled mold that has been especially designed for no-interruption casting.

The new molding technique permits many ingots to be cast at once, then slowly withdrawn as the metal hardens. Molten metal is siphoned from a master reservoir into individual molds in proportion to the speed at which the hot ingots are emerging. The siphons can be instantly stopped and started if "semi-continuous" casting is preferred to continuous casting.

Invented by William T. Ennor of Oakmont, Pa., and Arthur C. Heath Jr., of Massena, N. Y., who assigned patent No. 2,683,294 to the Aluminum Company of America, the gentle action of the siphons eliminates faulty ingots that often are produced when metal is squirted into molds. The siphons permit the molten metal to flow into the molds smoothly without carrying air which can oxidize the metal.

Science News Letter, July 24, 1954

PSYCHOLOGY

Pencil Use May Guide the Interview

▶ THE FREQUENCY with which an interviewer, whether psychologist or reporter, uses his pencil to take notes may unconsciously guide the response of the person being questioned.

In studies conducted by Dr. Eugene Talbot of the University of California at Los Angeles, subjects were asked to recite unconnected words for 30 minutes. These were tape recorded.

In one group, Dr. Talbot, who was visible to all subjects, jotted down every plural noun uttered. Subjects were not told what he wrote down. In a second group, no notes were taken.

The first group uttered significantly more plural nouns than the second group. Apparently the note-taking furnished cues that unconsciously increased the number of plural nouns uttered.

This finding may be especially significant to psychiatrists and psychologists who use non-directive therapy. In this technique, the interviewer merely listens, taking occasional notes and commenting or nodding only enough to keep the subject talking.

The studies suggest that note-taking and other slight responses of the interviewer stimulate the subject to talk more about the topic being covered when such responses are made.

Science News Letter, July 24, 1954

CE FIELDS

ENTOMOLOGY

Collect Bedbugs to Tell Origin of Atoll People

▶ BEDBUGS ARE being collected on a Pacific atoll in the hope that the origins of the people there can be determined.

The island of Kapingamarangi in the southern Carolines has a Polynesian culture. Yet the island is located about half way between Micronesia, to the north, and Melanesia, to the south, and about 2,000 miles west of Polynesia.

The Polynesians, Micronesians and Melanesians have many cultural differences, one of them being their bedbugs. The Kapingamarangians are believed to have Polynesian bedbugs. Certainty on this point may help to establish their origins.

The bedbug collections are being made by Dr. Cadet H. Hand, Jr., marine biologist of the University of California. He will bring them to Berkeley for analysis by another California scientist, Dr. Robert L. Usinger, professor of entomology.

Dr. Hand is a member of a six-man team sent to the Carolines to continue the five-year Coral Atoll Research program for the Pacific Science Board of the National Academy of Sciences-National Research Council. His primary interest is in the lower forms of sea animals, corals, jellyfish, sea anemones and starfish.

The anthropological record of Kapingamarangi is now fairly complete, but the biology of the atoll is sketchy. The study is expected to be especially rewarding because the reef appears to have had little dependence on contacts with outside islands over a long period of time.

Science News Letter, July 24, 1954

VETERINARY MEDICINE

Vaccine to Combat Blue Tongue Disease

▶ A VACCINE to combat the mysterious killer of sheep, African blue tongue disease, is now available. Extensive field tests have proved it effective.

Blue tongue, until it was discovered in California flocks recently, was hardly known outside of Africa. Prompt action by scientists from the U.S. Department of Agriculture, the University of California and Lederle Laboratories in Pearl River, N. Y., resulted in development of the vaccine.

It is the first vaccine to be developed in this country. A vaccine against blue tongue is in use in South Africa, but experts feared its importation here might lead to the introduction of a new strain of the disease.

Blue tongue is a virus disease spread principally by gnats. The season runs from midsummer to the first frost, when the insects are abundant.

Symptoms of the disease show up three to six days after infection when the sheep become feverish and dull. The tongue, throat and parts of the head swell, and diarrhea and cloudy eyes may occur.

The disease is fatal in about one out of five infected sheep, but secondary effects include poor wool condition, loss of weight and screw worm infestation, resulting in severe economic loss.

Blue tongue disease struck flocks totaling 325,000 head in 1952 in California, causing 15,000 deaths.

Science News Letter, July 24, 1954

TECHNOLOGY

Paper Strips Guide Cars Around Road Repairs

▶ PAPER STRIPS glued to the road have successfully routed traffic around highway construction in California.

The strips can be taken up easily. They leave no marks to confuse motorists when traffic is shifted to other lanes to avoid advancing construction, the Highway Research Board in Washington reports.

The strips were cut from heavy roofing paper, painted with white traffic lacquer and sprinkled with glass beads. Asphaltic emulsion was used to stick them to the road. They could be pried loose with a point shovel.

Science News Letter, July 24, 1954

PHYSIOLOGY

Radiation Sickness Slows Stomach Action

▶ EARLY MANIFESTATIONS of radiation sickness, such as loss of appetite and nausea, may be related to a temporary impairment of the stomach's functions.

Research with experimental animals by Dr. Marta S. Billings, Dr. Leslie Bennett and L. M. Burlingame of the University of California at Los Angeles Atomic Energy Project has shown that the emptying of food from the stomach is consistently retarded soon after exposure to radiation.

Barium was mixed with the animals' food, and progress of the food through the stomach and intestines of normal and irradiated animals was followed by X-ray studies.

Approximately all of the food eaten by normal animals was found to have been passed on to the intestines during the first three hours. In animals previously exposed to radiation, however, about 50% of the food was still in the stomach six hours after the meal. Abnormal food retention lasted up to seven days after radiation exposure.

This impaired function of the stomach may also contribute to the lack of appetite and nausea of patients undergoing radiation therapy.

Science News Letter, July 24, 1954

PHYSIOLOGY

Finger Tip Control Key to Hand Function

▶ SENSES IN our finger tips may furnish most of the cues that help control the skilled movements of our hands, John Lyman and Tom Sheridan of the University of California at Los Angeles have found.

Their research, related to glove design, is supported by the Army Quartermaster Corps. Gloves, even thin surgeon's gloves, restrict manual skill by reducing finger tip sensitivity.

Thumbs, as well as the index and middle fingers, are essential for fine manipulation. The third and little fingers seem to be relatively unimportant.

Future glove design for service forces and industry may be based upon the principle of the cat's claw, the engineers suggest.

For protection against cold, heavy material may be used on the back of the hand. The palms and front of the fingers would be covered with thin material. Warmth could be achieved merely by making a fist.

Gloves for protection from heat may be mitten-like affairs with only the thumb and first two fingers separated. The less surface available for heat transfer, the cooler the inside of the glove.

Science News Letter, July 24, 1954

MEDICINE

Treat Heart Disease in Girls Before Marriage

▶ YOUNG WOMEN with heart disease who want to have children should get necessary treatment for their heart condition before marriage.

This is the "logical" time for such treatment, Dr. Burton E. Hamilton, consultant in cardiology to the Boston Lying-in Hospital, reports in *Circulation* (June).

Since successful pregnancy for women with heart disease "depends in part on planned living and cooperation from the patient's family, timely education for all concerned is needed," Dr. Hamilton says.

If surgery is indicated, for example, to repair damage to the heart valves caused by rheumatic fever or to correct congenital heart defects, it should preferably be undertaken in advance of pregnancy. Dr. Hamilton states that the "need for surgery during pregnancy should be avoidable, except in rare circumstances, if cardiacs receive timely education."

The majority of young women with heart disease are not seriously handicapped by their condition and can expect to bear children successfully, Dr. Hamilton says. For such patients, who he describes as "favorable" cases, the mortality rate goes up only slightly as a result of becoming pregnant.

He emphasizes that this is true "only if the pregnant patient seeks and receives proper care." If not, she runs nearly as great a risk as if she were among the few heart patients in poor condition.

Science News Letter, July 24, 1954

ASTRONOMY

Venus Becoming Brighter

Mars, Saturn and Jupiter are other planets visible on August nights. Taking a good look at the moon with binoculars or opera glasses is recommended.

By JAMES STOKLEY

STILL INCREASING in brightness as it swings nearer earth, Venus is the most prominent of the planets now visible.

Soon after sunset, and long before the sky is really dark, it can be seen shining brilliantly in the southwest. In fact, it can even be seen during the daytime, to the east of the sun, if one knows just where to look.

Venus is in the constellation of Virgo, the virgin, and during August its westward motion brings it closer and closer to Spica, the brightest star in that group, which it passes on the last day of the month.

However, the planet, of magnitude minus 3.8 on the astronomical scale, exceeds the star in brightness about a hundred-fold.

The accompanying maps are prepared to show the appearance of the skies about 10:00 p.m., your own kind of standard time, on the first of August, and an hour earlier at the middle. (Add one hour if on daylight time.)

Venus sets before this, about two hours after sunset, so it is not shown, but its prominence makes it easy to identify.

Mars Remains Prominent

The other prominent planet of our August evenings, only about a tenth as bright as Venus, though still much brighter than any other, is Mars. This is shown to the south, in Sagittarius, the archer. The stars of this group form a very nice little teapot and Mars is just above the spout.

Since Mars is now drawing away from earth, it will dim rapidly during the coming months of autumn.

Another planet shown is Saturn, in the constellation of Libra, the scales. It is considerably fainter, about equal to a typical star of the first magnitude.

Brightest of the stars seen on August evenings is Vega, in Lyra, the lyre, which is directly overhead for the times for which the maps are drawn.

Below it and toward the east is Cygnus, the swan, where we find the first magnitude star Deneb. A little below and to the right of Cygnus may be seen Aquila, the eagle, in which Altair shines.

Toward the southwest, to the right of Sagittarius, is Scorpius, the scorpion. The bright star in this group is Antares, notable for its red color, like that of the nearby planet Mars.

In the northwest can be seen the Great Dipper, part of Ursa Major, the great bear. In the bowl of the dipper are the two pointers, whose direction shows the way towards Polaris, the pole star, in Ursa Minor, the lesser bear.

If the curve of the dipper's handle is followed toward the left, it will bring you to another first-magnitude star, Arcturus, in Bootes, the bear driver.

Late in the night another planet comes into view. This is Jupiter, in Gemini, the twins. It rises about two hours ahead of the sun, and its brightness is about the same as that of Mars.

Familiar as the moon is, it is apt to be neglected some by astronomers, perhaps as a result of its familiarity. Of course, the distant galaxies, which can only be observed with the greatest of telescopes, may be much more glamorous, but there are still many features of the moon that will repay a careful observer.

Moon Through Binoculars

If you have a good pair of binoculars, magnifying perhaps six or eight diameters, try looking at the moon with them some night. As a matter of fact, even a pair of opera glasses will give a rather surprisingly good view of our satellite.

The best time to look is around the phase of first quarter, which occurs in August on the sixth. Then the sun's light, by which the moon is illuminated, comes from the side, and there are shadows from features in the middle of the disc, throwing them into relief.

When the moon is full, the light is coming from in back of us, over our shoulders, so to speak, and the lighting is much flatter, although even this gives an interesting view. Then the dark markings which are called "seas," even though they are entirely dry, and which make up the features of the "man in the moon," are most apparent.

A view around first quarter will show some of the larger craters, more than a hundred miles in diameter. The lunar craters were formerly thought to be volcanic in origin, like similar objects on earth. Although this theory still has its adherents, it is now more generally believed that they are the result of meteoritic bombardment at some past period.

The modern form of this theory was proposed shortly after World War I by an American physicist, Dr. Herbert E. Ives, who in his war service had been struck by the similarity of aerial bomb craters to those of the moon.

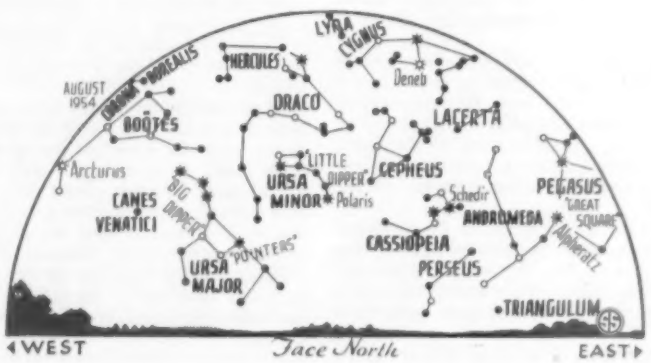
Bombing by Meteorites

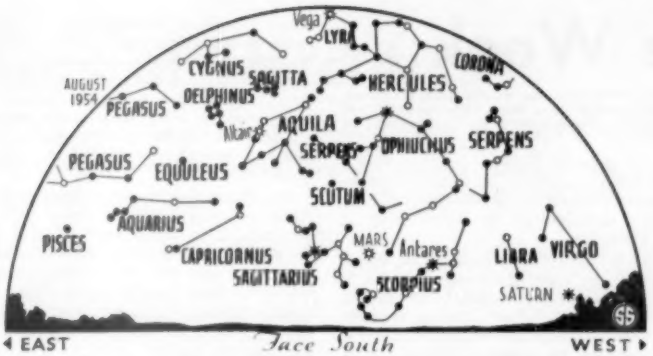
He pointed out that a meteorite hitting the moon would be like a bomb. As it approached the moon, it would have tremendous speed, which would give it enormous energy. But when it hit the surface, it would be quickly stopped, and its energy of motion would be converted into heat, enough to vaporize the mass of the meteorite itself, as well as much of the surrounding surface.

This rapidly expanding gas would produce a violent explosion, so it is not surprising that the craters resemble bomb craters.

Perhaps the best evidence for this sort of an origin is found in what is known as Schroeter's rule, discovered by a German astronomer a century and a half ago and fully confirmed by later work. It states that the material in the upraised wall around the crater is approximately equal in volume to the hole below the general level, in the middle.

This is just what would happen with a bomb-like explosion, for the wall is formed of material blasted out of the center. The two volumes should be equal, since the bomb itself, or the meteorite, contributes very little additional material.





SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

With a volcano, on the other hand, the upwelling of lava from underground piles up, and the wall is ordinarily far bigger than the depression inside the crater.

That even important lunar discoveries can still be made by an amateur astronomer with a small telescope was strikingly shown last year. On July 28 John J. O'Neill, a Long Island amateur astronomer and science writer, was observing the moon with a telescope equipped with a lens four inches in diameter, using a power of 200 diameters.

At the eastern border of the dark area known as the Mare Crisium, Sea of Crises, he noticed what seemed to be a natural bridge, spanning two capes about two miles apart. He could observe the light shining under the bridge, which showed that it was not merely a ridge.

This was so extraordinary that he naturally wanted some confirmation, so he wrote to Dr. H. Percy Wilkins, an English astronomer and authority on the moon. As Dr. Wilkins described it later before a meeting of the British Astronomical Association:

"On Aug. 26 I began to observe, firmly convinced that I was about to debunk the whole affair! I used powers up to 300 on my 15-inch telescope and . . . well, there it was! At least, there was the appearance of a bridge with the sunlight streaming under it, and with the shadow of the arch cast upon the plain."

Unfortunately, Mr. O'Neill died last autumn, before he had heard from Dr. Wilkins of this confirmation of his discovery. Other astronomers have also observed it, so "O'Neill's bridge" has become a recognized lunar feature, a memorial to its discoverer, and an excellent proof that there is still much we do not know about the moon!

Celestial Time Table for August

Aug.	EST	
2	1:18 p.m.	Moon passes Venus.
5	10:00 p.m.	Moon farthest, distance 251,200 miles.
	10:08 p.m.	Moon passes Saturn.
6	1:50 p.m.	Moon in first quarter.
10	2:32 a.m.	Moon passes Mars.
12	early a.m.	Meteors of Perseid shower, apparently radiating from constellation of Perseus visible, but bright moonlight will interfere with the display.
14	6:03 a.m.	Full moon.
18	1:00 a.m.	Moon nearest, distance 228,200 miles.
20	11:51 p.m.	Moon in last quarter.
21	3:00 p.m.	Mercury beyond sun.
24	8:08 p.m.	Moon passes Jupiter.
28	5:21 a.m.	New moon.

Science News Letter, July 24, 1954

NUTRITION

Forced Eating May Cause Child's Loss of Appetite

▶ A CHILD'S appetite, when unhampered by illness or mental conflict, will usually be governed by need, Dr. Robert Ulstrom, University of California at Los Angeles pediatrician, advises.

"We seldom see a young baby who is physically well that does not eat well," he has found. "As his growth rate slows markedly, about age two years, he fails to increase his food intake. His eating habits become quite erratic.

"Because the parents cannot understand this tremendous variation of intake from meal to meal, the child may be prodded or forced to eat more than he wants. The rebellion of the child may be so great to this prodding and anxiety of his parents that he may become truly malnourished because of loss of appetite."

Dr. Ulstrom concludes that if the problem is anticipated or caught early, no special measures of correction, other than understanding, are necessary.

Science News Letter, July 24, 1954

GENERAL SCIENCE

Many Scholarship Honors

▶ WINNING FIRST place this year in the Science Talent Search, one of the toughest scholarship competitions, has brought more than $30,000 in scholarship offers to a high school senior, Alan F. Haught, 17, of Bethesda, Md.

He has refused all 30 of the college offers to carry out his original plan to attend Amherst College. Since need is the basis for scholarship awards at Amherst, he will have none from that college.

Alan, who graduated near the top of his class of 402 at Bethesda-Chevy Chase High School, intends to finish a liberal arts degree before he specializes in physics at Massachusetts Institute of Technology.

In the Thirteenth Annual Science Talent Search he was named, from 16,344 seniors who competed from every state, to receive the $2,800 Westinghouse Grand Science Scholarship. He will use this at Amherst.

His work on a project of basic research in pure science, summarized in a highly technical report, entitled "Spectrographic Determination of Intermediate Products in Catalytic Reactions," helped to win him the Westinghouse Scholarship last March.

It also brought him a prized summer assignment at the National Bureau of Standards where he is student-aide to Dr. Wallace Brode, associate director. Dr. Brode is an authority in the field of chemical spectroscopy.

Of the 40 winners in the 1954 Science Talent Search, nine others are working at the Bureau this summer, getting their first taste of scientific research on a large scale. Like Alan, all the winners have had many offers of scholarship assistance, which they are accepting according to their financial need. Most of them have summer employment in line with their scientific specialties.

Thousands of boys and girls, who will graduate from high schools in 1955, are seeking to emulate these accomplishments. Many of them are using their summer holiday to prepare for the Fourteenth Annual Science Talent Search for the Westinghouse Science Scholarships.

Vacation leisure is giving them a chance to carry out reading, research and experiments in their chosen scientific fields.

Science News Letter, July 24, 1954

LINGUAPHONE for LANGUAGES

THE NATURAL WAY TO LEARN

FRENCH, SPANISH, GERMAN, ITALIAN, RUSSIAN, JAPANESE, PORTUGUESE, MODERN GREEK

any of 29 languages

With the Linguaphone Conversational Method you can LISTEN and LEARN a language in 20 minutes a day. AT HOME you hear native men and women speak, you listen—you Understand, YOU SPEAK! Used by schools, governments, Armed Services and business firms. A million home-study students of all ages. WRITE TODAY for FREE Book, "Passport to A New World of Opportunity."

LINGUAPHONE INSTITUTE
3107 RCA Building, New York 20, N. Y.
Send me your FREE Book.
LANGUAGE INTEREST .....
NAME .....
ADDRESS .....
CITY ..... ZONE.... STATE....
Our 50th Yr. of Up-to-Date Modern Language Courses

• Books of the Week •

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ALL ABOUT HOUSE WIRING—Floyd Mix and E. C. Pritchard—*Goodheart-Willcox*, 176 p., illus., $2.50. For the handy-man house owner who lives where special licenses are not required for electrical work.

ANALYTICAL CHEMISTRY IN RETROSPECT AND PROSPECT—George D. Beal—*Mellon Institute*, 3 p., illus., paper, free upon request direct to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

ANNALS OF THE ASTROPHYSICAL OBSERVATORY OF THE SMITHSONIAN INSTITUTION: Volume 7—L. B. Aldrich and W. H. Hoover—*Govt. Printing Office*, 184 p., illus., paper, $1.75.

ARCHAEOLOGY FROM THE EARTH—Sir Mortimer Wheeler—*Oxford University Press*, 221 p., illus., $4.00. "There is no right way of digging," says the archaeologist author, "but there are many wrong ways." This down-to-earth book will aid the young scientist in avoiding tragic and unalterable mistakes.

BIOCHEMISTRY OF CANCER—Jesse P. Greenstein—*Academic*, 2d ed., 653 p., illus., $12.00. These days, many different disciplines are contributing to research on cancer. This book is devoted to findings from just one of these fields.

CAVES OF THE RESERVE AREA—Paul S. Martin, John B. Rinaldo and Elaine Bluhm — *Chicago Natural History Museum*, Fieldiana: Anthropology, Volume 42, 227 p., illus., paper, $5.00. Report of archaeological research on the Mogollon culture of west-central New Mexico. In the course of this research it was found possible to make up a calendar of arrow point styles, useful for dating archaeological finds.

COMMUNITY AND ENVIRONMENT: A Discourse on Social Ecology—E. A. Gutkind—*Philosophical Library*, 81 p., $3.75. Solution of the world's problems is here seen in the building of small communities where men can learn mutual appreciation.

CONCRETE RESURFACING OF CONCRETE PAVEMENT IN VARIOUS STAGES OF DETERIORATION: Presented at the Thirty-Third Annual Meeting, January 12-15, 1954—Fred Burggraf and W. J. Miller, Eds.—*Highway Research Board*, Bulletin 87, 40 p., illus., paper, 60 cents. An accurate photographic record of the old pavement through the years made it possible to correlate defects developing in the resurfacing with those that existed in the old pavement.

THE DISCOVERY OF UNICELLULAR LIFE: Excerpts From Communications by Antoni Van Leeuwenhoek to the Royal Society of London—Foreword by A. J. Kluyver—*Chronica Botanica*, 15 p., paper, free upon request direct to publisher, Waltham 54, Mass. This small keepsake was prepared to mark the opening of Prof. Waksman's new Institute for Microbiology at Rutgers University.

THE FLOOD CONTROL CONTROVERSY: Big Dams, Little Dams and Land Management—Luna B. Leopold and Thomas Maddock Jr. — *Ronald Press*, 278 p., illus., $5.00. Making available to the general reader and to technicians in foreign countries an analysis of flood control measures.

GEOGRAPHICAL ESSAYS—William Morris Davis. edited by Douglas Wilson Johnson—*Dover*, 777 p., illus., $5.50. Republication of a 1909 collection of papers by the Harvard scientist.

THE GIANT CACTUS FOREST AND ITS WORLD: A Brief Biology of the Giant Cactus Forest of Our American Southwest—Paul Griswold Howes—*Duell, Sloan, and Pearce—Little, Brown*, 258 p., illus., $7.50. This book resulted from field trips by the curator of the Bruce Museum, Greenwich, Conn., and his wife.

HIGHWAY FINANCE: Selected References, 1950-1953—Fred Burggraf and W. J. Miller, Eds.—*Highway Research Board*, Bibliography 16, 65 p., paper, 75 cents.

INDIAN CORN IN OLD AMERICA—Paul Weatherwax—*Macmillan*, 253 p., illus., $7.50. Although this book is mainly a botanical treatise about one of our most important plants, since the story of the development of corn is also the story of the development of man in America, the book has great anthropological interest.

INSECTS AND THE HOMES THEY BUILD—Dorothy Sterling—*Doubleday*, 125 p., illus., $2.50. Charming descriptions of the ways of insects in building unusual structures to house their young. Beautiful pictures.

MANPOWER RESOURCES IN MATHEMATICS: A Study Conducted Jointly by the National Science Foundation and the United States Department of Labor—*Govt. Printing Office*, 22 p., illus., paper, 20 cents.

MISS PICKERELL GOES TO THE ARCTIC—Ellen MacGregor — *Whittlesey House, McGraw-Hill*, 126 p., illus., $2.25. An amusing and interesting book for young people.

NEEDED: A CIVILIAN RESERVE: Recommendations of the NPA Special Committee on Manpower Policy and a Report by Helen Hill Miller—National Planning Association, 49 p., paper, $1.00. Pointing to the need for the finding and training of a reserve of specialists from business, union, farm and university for the initial staffing of the mobilization effort in case of future war or national emergency.

NUCLEAR REACTOR DEVELOPMENT: Proceedings of a Meeting for Members and Guests, May 24, 1954, Sheraton Park Hotel, Washington, D. C.—*Atomic Industrial Forum*, 99 p., illus., paper, $5.00. Report of a meeting of an organization whose aim is the advancement of peaceful development of atomic energy.

PERFORMANCE OF PLUMBING FIXTURES AND DRAINAGE STACKS—Fred W. McGhan—*Govt. Printing Office*, Housing Research Paper No. 31, 32 p., illus., paper, 25 cents. Discussing the problem of guarding public health and preventing distressing odors by proper plumbing fixtures.

PROCEEDINGS OF THE THIRD RESEARCH CONFERENCE ON PSYCHOSURGERY — Winifred Overholser, Ed.—*Govt. Printing Office*, 173 p., illus., paper, $1.00. Public Health Service Publication No. 221. An evaluation of at least 18,600 operations for mental illness performed over 15 years. It was agreed that the bilateral standard operation is more effective; the patient faces a 40% chance of change of personality, an 80% chance of complete relief and a 92% chance of surviving.

THE QUANTUM THEORY OF RADIATION — W. Heitler—*Oxford University Press*, 3d ed., 430 p., illus., $7.20. Unlike other physical theories, the author points out, the quantum theory has become stronger with the passage of time. This is a systematized account of the theory.

RARE METALS HANDBOOK—Clifford A. Hampel, Ed.—*Reinhold*, 657 p., illus., $12.00. Bringing together available reference data on over 34 rare or uncommon metals.

THE SCIENCE BOOK OF SPACE TRAVEL—Harold Leland Goodwin—*Franklin Watts*, 213 p., illus., $2.95. An attempt to debunk some of the strange ideas young people may have gotten from popular television programs and comic strips.

SMOKEY STOVER—Bill Holman—*National Fire Protection Association*, 13 p., illus., paper, $45.00 per 1,000. A comic book prepared especially to teach children some of the dangers of fire, and the precautions to be taken to avoid them.

A STUDY OF ADMINISTRATION OF STATE PSYCHIATRIC SERVICES—Raymond G. Fuller—*National Association for Mental Health*, 60 p., paper, 50 cents. A two-year study which charges most states run their mental hospitals in ways that are "archaic, inadequate and ill-fitted to the job to be done." (See page 54.)

THE TECHNICAL REPORT: Its Preparation, Processing, and Use in Industry and Government—B. H. Weil, Ed.—*Reinhold*, 485 p., illus., $12.00. Modern industry turns out tens of thousands of technical reports annually, most "never to be read or failing to be understood."

THE THEORY OF THE PHOTOGRAPHIC PROCESS—C. E. Kenneth Mees—*Macmillan*, rev. ed., 1133 p., illus., $21.50. A general handbook and guide to the literature. The author is in charge of research for Eastman Kodak.

THOREAU—William Condry—*Philosophical Library*, 114 p., illus., $3.50. A biography of the famous American poet, philosopher and naturalist.

W. H. HUDSON—Ruth Tomalin—*Philosophical Library*, 143 p., illus., $3.50. The biography of a noted naturalist of the past century, born in South America, but who nevertheless spent many of his years in England.

Science News Letter, July 24, 1954

TRANSPARENT
PLASTIC BOXES

Write for Data TPB-SNL

R. P. CARGILLE LABORATORIES, INC.
117 Liberty Street, New York, N. Y.

GEOLOGY

Drill Hole in Glacier To Measure Ice Level

▶ A HOLE will be bored over a quarter of a mile deep in Saskatchewan Glacier in the Canadian Rockies to determine the flow of this river of ice.

A seven-man expedition from the California Institute of Technology, headed by Dr. Robert P. Sharp, will conduct the study.

An electric hotpoint drill will cut the hole approximately 1,500 feet deep. It will extend from the surface to the bottom of the ice in the upper reaches of the Glacier. The pipe will be left in the hole so that for years in the future its deformation will allow measurements of the glacial flow.

Science News Letter, July 24, 1954

PSYCHOLOGY

Users of Narcotics

Users of marijuana, benzedrine or cocaine are not addicted, but habituated, the specialists say, and there are no withdrawal symptoms when these drugs are withdrawn.

▶ NOT ALL users of narcotic drugs are drug addicts.

This is one of the popular misconceptions about drugs dispelled in a booklet published by the Committee on the Use of Narcotics Among Teen Age Youth of the Welfare and Health Council, New York. The booklet was prepared for the guidance of physicians and the public by Dr. Hubert S. Howe, chairman of the Subcommittee on Treatment, and Lynn Stratton Morris, secretary of the Committee on the Use of Narcotics Among Teen Age Youth and the Committee on Public Health Relations, New York Academy of Medicine.

In the booklet, methods of treatment for narcotics addicts to "get them off the drug" are brought together and described. Its title is "Treatment of Withdrawal Symptoms of Persons Addicted to Narcotic Drugs." (See SNL, July 3, p. 12.)

The user of marijuana, the pep drug, benzedrine, or cocaine is not addicted, but habituated to the drug in the language of specialists. These drugs are not addicting; there are no withdrawal symptoms when they are taken away from the user.

People habituated to large doses of barbiturates should never be treated by abrupt withdrawal, however, the booklet states. Some individuals abruptly faced with withdrawal of the barbiturate will have convulsive seizures. Gradual reduction of dosages over a week's time will prevent these "fits."

Use of even addicting drugs does not necessarily lead to crime, the booklet asserts. Those who have no difficulty in obtaining their drug, and to whom the cost is not a burden, do not as a rule constitute a danger to society. It is when the cost of the drug is beyond their means, as it usually is, that addicts may turn to crime for the drug money.

"Experts agree," the booklet states, "that narcotic users should not be judged by accepted moral standards."

The individual addicted to opiates or the synthetic pain relievers, except Demerol, can be spotted by the physician by their expressionless eyes. The eye pupils show no animation and do not dilate in the dark. They have been called "fish eyes" or "dead eyes." Cocaine, by contrast, causes dilation of the eye pupils.

Proof of addiction is in what happens when the drug is withdrawn. About 14 to 18 hours after the last dose, the addict begins to yawn. Then tears flow, the nose runs and he sweats. After 24 hours, pupils dilate and he has wave after wave of gooseflesh—origin of the term "cold turkey" for abrupt withdrawal.

Once the physician is certain his patient is a drug addict, he should make every effort to get him into an institution in order that the patient will have the proper treatment, the booklet advises.

Science News Letter, July 24, 1954

MEDICINE

Heat Danger Signal

▶ DURING HEAT waves, watch out for sudden stopping of sweating. Doctors have found this is the most important warning sign of impending heat stroke.

If it appears, get the person to bed and make him as cool as possible. Urge him to drink lots of water. If sweating does not start soon, call a doctor.

Drinking lots of water is important during hot spells because when you perspire, you lose water from your body. Studies made a few years ago showed that taking a drink of water regularly every hour helped people keep up efficiency and avoid fatigue during hot weather.

Loose fitting clothing of porous or mesh weave is best for hot weather because it helps let the heat escape from the body.

Heat stroke is the most serious of the three conditions that result from extreme summer heat. The other two are heat cramps and heat exhaustion. "Sunstroke" may be either heat exhaustion or heat stroke.

When a person is overcome by heat, lose no time in calling a doctor.

Heat cramps do not end fatally. Heat exhaustion comes when the circulation in small blood vessels fails. Normal persons do not usually die directly from heat exhaustion, especially if removed from the excessive environmental heat. However, old persons, those sick with weakening diseases and those with impaired circulation may have their deaths hastened by heat exhaustion.

Heat stroke results from failure of the sweating mechanism, through involvement of a part of the brain called the hypothalamus. Heat stroke alone may be responsible for deaths caused by excessive heat in previously normal persons.

Symptoms of heat stroke include headache; red face; hot, dry skin with no sweating; strong and rapid pulse; very high body temperature and usually unconsciousness.

Symptoms of heat exhaustion include pale face; moist, cool skin with profuse sweating; weak pulse; low temperature and sometimes nausea, vomiting and giddiness.

Treatment for heat stroke is get the patient as cool as possible by removal to a shady spot, sprinkling with water, removing most of his clothes. Treatment for heat exhaustion is to get the patient warm by covering with a blanket, and give him such stimulants as warm tea or coffee, or smelling salts.

Science News Letter, July 24, 1954

DERMATOLOGY

Cortisone Effective for Severe Skin Disorders

▶ CORTISONE, USED effectively in the treatment of rheumatoid arthritis, can help patients with severe and distressing chronic skin diseases, two New York physicians report in the *Journal of the American Medical Association* (July 10).

This use of cortisone in many cases prolonged the life of patients with skin disorders ordinarily considered fatal. It brought relief and rehabilitation to other patients suffering from chronic diseases that ordinarily would incapacitate them.

Four years' experience by Drs. Marion B. Sulzberger and Victor H. Witten shows that those being treated did not acquire resistance to the drug, and that there was no need of continued increase in the dosage. Neither was there any addiction to the drug.

In most cases, the amount given could be progressively decreased and the disease was kept under control while the patient was being slowly weaned from the hormone.

The disorders treated were first, those not ordinarily fatal but in their severe forms often ruinous to life, such as severe atopic dermatitis or exfoliative erythrodermas or exudative discoid and lichenoid chronic dermatoses, and second, the ordinarily finally fatal but often chronic dermatoses, such as various forms of pemphigus, and acute disseminated lupus erythematosus.

Science News Letter, July 24, 1954

MATH IS FUN

By Joseph Degrazia, Ph.D.

Here is a treasury of brain-teasers. You need not be a mathematical genius to solve these problems and puzzles. What you need is to know how to THINK LOGICALLY—how to REASON. This is practically a "course" in applied logic and reasoning—besides being an immense amount of fun that will keep you absorbed for many hours. You will find not only that MATH IS FUN, but also that learning math can be fun!

CONTENTS: Trifles—On the Borderline of Mathematics—Faked Documents—Cryptograms—How Old Are Mary and Ann?—Wolf, Goat and Cabbage—and Other Old Coincidences—Clock Puzzles—Trouble Resulting from the Last Will and Testament—Speed Puzzles—Railroad Shunting Problems—Agricultural Problems—Shopping Puzzles—Whimsical Numbers—Playing with Squares—Miscellaneous Problems—Problems of Arrangement—Problems and Games—Solutions

Many delightful and helpful illustrations

Solutions where needed

Large Book • 159 Pages • 159 Hours of Fun

$2.75 • 5-Day Money-Back Guarantee

EMERSON BOOKS, Inc.

Dept. 85-K, 251 W. 19 St., N. Y. 11

TECHNOLOGY

Nickel Base Alloy Adds Thrust to Jet Engines

▶ THE TRANSCONTINENTAL flight record of three hours, 45 minutes and 30 seconds recently set by three Navy Cougars was partly made possible by a nickel-based alloy that permitted their turbojet engines to deliver greater thrust than previously.

The alloy, Pratt & Whitney Aircraft engineers believe, possesses greater heat-resisting qualities at operating temperatures of 1,500 to 1,600 degrees Fahrenheit than any other wrought alloy known.

The material, designed to resist "metal fatigue," stretch and rupture, is being used for turbine blades in the Air Force's Starfires, and the Navy's Panthers and Cougars.

The basic formula for "Waspaloy," as the material is called, was worked out by R. H. Thielemann, development metallurgist at Pratt & Whitney, who used ingredients most of which are readily available in North America.

Mr. Thielemann used nickel for a base and added chromium, cobalt, molybdenum, and small amounts of titanium and aluminum. All these metals, except cobalt, are abundant in North America.

Science News Letter, July 24, 1954

PLANT PATHOLOGY

Wonder Drug Prevents Wilt of Chrysanthemum

▶ BACTERIAL WILT disease of chrysanthemums can be controlled by use of both streptomycin and oxytetracycline, or Terramycin.

The antibiotics were applied by holding cuttings in solutions containing the materials, planting in antibiotic-treated sand, and adding antibiotic material to rooting hormone powder.

Tests by the New Jersey Agricultural Experiment Station at Rutgers University showed that amounts of antibiotics were sufficient to give protection to the plants that developed from the treated cuttings.

Streptomycin was more effective than oxytetracycline, since it provided protection at lower concentrations and was less toxic.

Science News Letter, July 24, 1954

WORLD'S MOST AMAZING BARGAIN CATALOG
SAVE UP TO 85% ON WAR SURPLUS
1954 EDITION – OVER 300 PAGES
Packed with SENSATIONAL VALUES in WAR SURPLUS, FACTORY CLOSE-OUTS and GENERAL MERCHANDISE!
Fully Illustrated. Thousands of items in Hand & Power Tools, Outdoor & Sporting Equipment, Hardware, Photo Supplies, Foam Rubber, Industrial Tools, Aircraft Parts, Metals, Plastics, Gadgets, Hydraulic Supplies & many, many more.
Send 50c to cover cost of handling and mailing—credited to first order.
PALLEY SUPPLY CO.
7265 E. VERNON AVE., RM 14, LOS ANGELES 58, CAL.

ZOOLOGY

NATURE RAMBLINGS

Toads and Frogs

▶ BOOKS GIVE various clues whereby the layman can distinguish toads from frogs. In general, toads are predominantly landlubbers with bumpy dry skin and broad plump bodies. Frogs are generally aquatic with smooth moist skin and more streamlined bodies.

However, there are so many exceptions in each particular that the distinction often disappears. Both frogs and toads are amphibians, a class they share with newts and salamanders.

The name amphibian comes from a Greek word meaning living a double life. Amphibians are equally at home on land or in the water. This versatile ability to thrive in either element is nowhere more startlingly demonstrated than in the tadpole stage of frogs and toads.

When a frog egg hatches, the newborn offspring is a strange-looking little creature that seems to be a tiny fish. It swims like a fish and it has gills that enable it to breathe like a fish. But in the course of a few weeks the tail grows longer and hind legs begin to develop. Eventually the two forelimbs, which have been forming unseen beneath the skin, are pushed out through the gill slits.

By now it has ceased to be an exclusively aquatic creature and is well on its way to fulfill its destiny as an adult frog or toad. It develops lungs. The tail, which at this stage is less a swimming instrument than a food reservoir to tide the youngster over the transition period, gets slowly smaller and smaller until it disappears altogether.

Since most waters abound with predatory enemies which spend the better part of their time cruising about looking for a bite of lunch, the life expectancy of tadpoles is not very high. To compensate for this, nature produces tadpoles in great numbers so that enough will survive into maturity to insure the perpetuation of the species.

Some frogs skip the tadpole stage entirely. There is one African frog which carries its fertilized eggs in its mouth, not eating until the baby frogs are hatched out. Some Latin American species carry the tadpoles on their backs, affixed by specialized sucking mouths.

One of the most remarkable is the Surinam toad of Brazil and the Guianas. Its back looks as though it had caught a shotgun blast, being pockmarked with innumerable hollow cavities. By dint of the most strenuous cooperation of the male, the fertilized eggs are forced into the pockets. In time the eggs hatch out, and the youngsters play mid-wife to their own births, clambering into life on their own power as they squirm out of their mother's back.

Science News Letter, July 24, 1954

PUBLIC SAFETY

25-City H-Bomb Raid

▶ THE PARALYSIS and death of the American nation would follow a 25-city Soviet air raid any time within the next three years, the *Bulletin of Atomic Scientists* (June) predicts.

"The obliteration of the central national government, combined with the destruction of emergency staffs in the target cities," the publication charges, "would leave the country with no recognized authority to take the lead in meeting the crisis."

Bombing only 25 top targets, the article says, would blast the heart out of the "cities in which 90% of the crucial records, money reserves, bookkeeping equipment, skilled personnel and executive knowledge and ability of American banking are located.

"The coal needed to operate the majority of our railroads and electric generating plants would be cut off by knocking out the cities in which 75% of the coal is wholesaled, by strategic bombing of coal-carrying railroads, and by blasting the major terminals and intersections of all the leading railroads.

"The petroleum products needed to operate auto trucks and cars, Diesel locomotives, and oil-burning electric plants would be destroyed and cut off by bombing the wholesale centers, the major refining centers, the pipe-line terminals and the shipping ports."

In a 1957 air raid, "of the 30,000,000 inhabitants of the target cities, about 9,000,000 would die immediately, 11,000,000 more would be casualties, and additional millions would be homeless."

Proposals for dispersal, evacuation and civil defense are unworkable and radically inadequate, it is charged.

Dr. Hornell Hart of Duke University wrote the article before the announcement of a deliverable hydrogen bomb, which now serves to increase the figures of destruction he projected in his graphic article.

Science News Letter, July 24, 1954

PHYSICS

First A-Bomb Blast

➤ THE CRADLE of the atomic bomb lies remote and lonesome upon the New Mexico desert.

Nine years ago, on July 16, the world's first atomic explosion fused the desert sands and fashioned a crater at a remote spot 50 miles northwest of Alamogordo.

Today this historic site is still under military control and impossible to visit without clearances and permissions. It is part of what is now called Holloman Air Development Center where guided missiles and pilotless aircraft are being developed and tested.

Barbed wire encloses the rim of the scar on the face of the earth where the first atomic bomb was detonated at the top of a 37-foot-high tower with a flash that lighted up the sky as far as 450 miles away.

One of the legends that has grown up about the bomb is that a blind girl near Albuquerque 120 miles away saw "the tremendous flash with her sightless eyes."

Dr. J. Robert Oppenheimer was head of Los Alamos Laboratory where the atomic bomb was built and developed. Instead of being barred from atomic "secrets," as now, he was creating them.

He was in command that tense dawn nine years ago when the scientists themselves were not quite sure that the bomb could be made to explode or, if it did, whether there might not be even larger chain reaction consequences than they expected.

The test did proceed as expected, however. The atoms fissioned explosively. The steel tower holding the bomb was completely vaporized. Sand within a radius of 400 yards was transformed into a glass-like substance, the color of green jade. For about a mile on all sides of the explosion there was not a rattlesnake or a blade of grass left.

Today the desert vegetation is restoring to wilderness this historic spot. Bits of fused glass, still somewhat hot with radioactivity, are finding their way into curio collections as symbols of the beginning of the atomic age.

Tourists cannot visit this atomic "shrine" since it is in the midst of three great test ranges of the Air Force and the Army, Holloman, White Sands and Fort Bliss.

When and if the preparations for the next war subside sufficiently, this is one of the new age spots that will undoubtedly be taken over by the National Park Service to be visited by tourists curious to see where the atom was first split in violence.

Science News Letter, July 24, 1954

PHYSIOLOGY

William Beaumont Shrine

➤ A CLASSIC research in medicine now has a shrine.

The Beaumont Memorial on Mackinac Island, Mich., has been dedicated to Dr. William Beaumont, who, over a century ago, conducted the first and most important experiments on digestion of food in the stomach made anywhere in the world.

The memorial is a reconstruction of the retail store of the American Fur Company, where in June, 1822, occurred the accident that resulted in the Beaumont experiments in the physiology of digestion.

A French-Canadian boy, Alexis St. Martin, was accidentally shot through the stomach. Dr. Beaumont, at that time an Army surgeon stationed at Fort Mackinac, was called to attend St. Martin.

While he cleaned the man's wound, he remarked that the patient would probably not live 36 hours. St. Martin did live. As a matter of fact, he survived Beaumont by many years.

Soon after the accident, the physician, out of charity, took St. Martin into his own home, cared for him and attended him professionally. For two years Dr. Beaumont tried unsuccessfully to get the wound in the boy's side to heal.

He then had his great inspiration and turned accident into opportunity. He started the experiment that not only brought fame to himself and his young patient, but laid the foundations for present medical knowledge of how the human stomach functions.

For eight years, off and on, Beaumont continued his studies, actually watching the stomach at rest and at work digesting different kinds of food.

He found what causes the flow of stomach juices, how they are mixed with and digest the food. Most people eat more than they need, he learned. Some foods digest easily, but others retard the digestive processes. Three to four hours he observed to be the length of time needed to digest the average meal.

Then in 1833 he published his findings. These have since been added to, but they have never been controverted because Beaumont's book is largely a report of factual observations.

The Michigan State Medical Society which sponsored the Beaumont Memorial expects many Americans to visit Mackinac Island and the Beaumont Memorial Collections, traveling to the historic site by horse-drawn carriage.

Science News Letter, July 24, 1954

The prospective *alcoholic* frequently experiences "blackouts," or memory lapses, after moderate drinking.

Questions

ARCHAEOLOGY—What are "atlatls?" p. 52.

□ □ □

ENTOMOLOGY—Where do chiggers usually bite? p. 53.

□ □ □

PHYSIOLOGY — How may bones give a clue to diet? p. 55.

How does radiation affect the stomach's action? p. 57.

□ □ □

PUBLIC HEALTH—What is a "sugar baby" in Jamaica? p. 54.

□ □ □

VETERINARY MEDICINE — How does blue tongue disease affect sheep? p. 57.

□ □ □

Photographs: Cover, Museo Nacional de Antropologia; p. 51, McDonnell Aircraft Corporation; p. 53, Bell Aircraft Corporation; p. 55, Pennsylvania State University; p. 64, Milton Riback.

ZOOLOGY

Rare Baby Rodents Received at Zoo

➤ TWO EXCEEDINGLY rare baby rodents, known in the United States only by their scientific name, have been received at the National Zoological Park in Washington.

Although babies, they are already one foot long and, when grown, will be about two feet, Dr. William Mann, director of the Zoo, said. They have enormous incisor teeth and are a mottled brownish color.

Although they have several different common names in South America, the scientists here know them only as *Dinomys branickii*. The two babies came from Colombia, South America.

Since only two or three others of this species have ever been shown in the United States, Dr. Mann considers them to be "zoologically very important."

Science News Letter, July 24, 1954

Losses from *forest fires* were held to an all-time low in the United States in 1953.

CHEMICAL INVENTORS—

You supply the product, we'll be your factory.

- Powder and liquid filling
- Cellophane wrapping
- Labelling and mailing
- Printing and paper boxes

Sparks

Shurs Lane and Pechin Street
Philadelphia 28, Pa.
IVyridge 8-7330

Packagers of *Things* of Science

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 736. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

WIDE-ANGLE LENS for 16mm cameras and projectors lets avid home-movie fans film pictures in CinemaScope. Adaptable to the projector, this high-quality professional lens fills a panoramic screen more than two and one-half times as wide as it is high.

Science News Letter, July 24, 1954

HOBBY WORKSHOP contains more than 150 tools for model building, wood carving, leather work and other crafts. These tools are housed in a cabinet 11 inches deep. The cabinet unfolds to provide a large working surface and has more than five cubic feet of extra storage space.

Science News Letter, July 24, 1954

MICROPRINT READER, designed for those who want quick access to volumes of printed matter, magnifies the microfilm image 22 times and casts it on an 8¼- by 10½-inch screen. The screen is inclined so that the user may assume a natural reading posture. Microprint cards up to 8 by 14 inches may be used with the unit.

Science News Letter, July 24, 1954

TOY TRACTOR, equipped with a powerful electric motor, runs forward and backward, fast or slow, turns on a dime, and does real bulldozing on a sandbox scale.

By remote control, Junior directs the maneuvers of this model of a diesel machine, shown in the photograph.

Science News Letter, July 24, 1954

COMPASS AND map-measure is a combination device to measure distances on a map and to show direction. To find the distance from one point to another, a motorist rolls the device along the highway map and reads the mileage from a dial. Vacationists exploring new territory may find the compass handy when they take the wrong road.

Science News Letter, July 24, 1954

FISHING KIT does many not-so-pleasant fishing chores by power. It scales fish, sharpens hooks and knives, ties flies, polishes tackle and cleans reels. The equipment comes in a steel case, 9 by 4 by 2½ inches.

Science News Letter, July 24, 1954

ALPHA RAY detector could have tremendous civil defense utility in case of an atomic attack. Its low price brings it within the budget of every family. It also is useful in the laboratory. About the size of a pocket knife, the device has a chemically-treated screen that registers a series of flashes when the examined item is "hot."

Science News Letter, July 24, 1954

WINDSHIELD WIPER ensemble has been designed for the wrap-around windshields of some 1954 cars. These severely curved glasses often have bad-weather corners that obscure vision and defy ordinary wipers. The new wiper sweeps into these blindspots and can be installed on the existing wiper pivot.

Science News Letter, July 24, 1954

Scientific Instruments You Can Make

How teen-age scientists have designed and built various scientific instruments. References guide the reader to research in the fields opened by use of these instruments.

Astronomical Instruments
Spectroscopes
Tesla Coils
Oscilloscopes
Cloud Chambers
Atom Counters
Van de Graaff Generators
Electronic Computers
Stroboscopes
Ultrasonics
Chromatography
Photomicrography
Mathematical Constructions

ILLUSTRATED
FULLY INDEXED — CLOTH BOUND

To: SCIENCE SERVICE
1719 N St., N. W.
Washington 6, D. C.

Mail to me at my address as imprinted to the left:

____copies of SCIENTIFIC INSTRUMENTS YOU CAN MAKE, cloth bound @ $2 each.

Am't enclosed $_____

Please bill me ( )

7-24-4

Do You Know?

Nearly two and one-half times as many *traffic deaths* occur on rural highways as on city streets.

The average person's *hair* grows half an inch per month; young persons' hair grows faster than the hair of their elders.

In World War I, it took fighter *planes* an hour to climb 6,000 feet, but today Navy carrier-based fighters can reach 10,000 feet in less than two minutes.

Nearly 13,000,000,000 *match books* are distributed annually in the U. S.; they carry advertisements of about 260,000 business concerns.

Today's *coal mine* is often white instead of black, because powdered limestone is sprayed throughout as a safety measure against the spread of an explosion.

Dairy *cows*, when kept on pasture, eat for an average of nine hours out of every 24; they chew their cuds nearly nine more hours.